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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,001

06/29/2006

Toshihiko Tsuji

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EXAMINER

SMYTH, ANDREW P

ART UNIT

PAPER NUMBER

2881

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,001	Applicant(s) TSUJI ET AL.	
	Examiner ANDREW SMYTH	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-15 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>07/31/2007, 06/29/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Allowable Subject Matter

1. Claims 7-15 are allowed.
2. The configuration was not found in a prior art search.

The search failed to show or suggest the prior use of:

From independent claim 7. An exposure apparatus, in which **the space between a projection optical system which projects a pattern onto an object and an object placed on the image-plane side of said projection optical system is filled with a liquid**, and exposure to said pattern is **performed through the liquid**, comprising: an opposing member, positioned apart from said object in the direction of the optical axis of said projection optical system; and a control device, which, **in response to notification of occurrence of an abnormality, moves said object and said opposing member apart along said optical axis direction.**

3. The following is a listing/ statement of reasons for the indication of allowable subject matter:

From Independent claim 7. An exposure apparatus, in which the space between a projection optical system which projects a pattern onto an object and an object placed on the image-plane side of said projection optical system is filled with a liquid, and exposure to said pattern is performed through the liquid, comprising: an opposing member, positioned apart from said object in the direction of the optical axis of said

projection optical system; and a control device, which, in response to notification of occurrence of an abnormality, moves said object and said opposing member apart along said optical axis direction.

4. Dependent claims 8-15 are allowable due to dependency upon allowable independent claim 7.

7. An exposure apparatus, in which the space between a projection optical system which projects a pattern onto an object and an object placed on the image-plane side of said projection optical system is filled with a liquid, and exposure to said pattern is performed through the liquid, comprising: an opposing member, positioned apart from said object in the direction of the optical axis of said projection optical system; and a control device, which, in response to notification of occurrence of an abnormality, moves said object and said opposing member apart along said optical axis direction.

8. The exposure apparatus according to claim 7, wherein said control device, in response to notification of occurrence of an earthquake, moves said object and said opposing member apart along said optical axis direction.

9. The exposure apparatus according to claim 8, wherein said object is movable within the plane perpendicular to said optical axis, and said control device, in response to notification of abnormal operation of said object, moves said object and said opposing member apart along said optical axis direction.

10. The exposure apparatus according to claim 8 or 9, further comprising an elevating device which moves said object in said optical axis direction and a driving device which drives said opposing member in said optical axis direction, wherein said control device controls at least one of said elevating device and said driving device to move apart said object and said opposing member along said optical axis direction.

11. The exposure apparatus according to claim 10, further comprising a first frame which supports said opposing member, and wherein said driving device is an vibration isolation device (column 6, lines 27-51) which supports said opposing member, movably in said optical axis direction, through said first frame.

12. The exposure apparatus according to claim 11, further comprising a second vibration isolation device (column 6, lines 27-51) which supports said object movably along said optical axis direction, wherein said control device (80, 81) controls at least one of said elevating device, said vibration isolation device, and said second vibration isolation device (column 6, lines 27-51) to move apart said object and said opposing member along said optical axis direction.

13. The exposure apparatus according to claim 10, wherein said driving device drives

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said opposing member, relative to said projection optical system, in said optical axis direction.

14. The exposure apparatus according to claim 7, wherein said object is a substrate for exposure to said pattern or a substrate stage holding said substrate, and movable with at least three degrees of freedom.

15. The exposure apparatus according to claim 7, wherein said opposing member comprises at least one of a liquid supply device which supplies liquid to the space between said projection optical system and said object, and a liquid recovery device which recovers said liquid.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi (US 6654095).

Nishi discloses the following:

Regarding applicant's claim 1. An exposure apparatus, comprising a projection

optical system which projects

and transfers a pattern formed on a mask onto a substrate (column 4, lines 18-35), and a substrate stage (WST), positioned below said projection optical system, which while holding said substrate (column 4, lines 18-35) moves in directions substantially perpendicular to the direction of the optical axis of said projection optical system, comprising:

a detector (AF), positioned on a periphery of said projection optical system, which detects the position of said substrate stage or of said substrate along said optical axis direction; and

a control device (80, 81), which halts or reverses movement of said substrate stage based on the result of detection by said detector (AF), .

Regarding applicant's claim 2. The exposure apparatus according to claim 1, further comprising an elevating device (80, 138, AF) (column 24, lines 32-53) which moves said substrate stage in said optical axis direction, wherein said control device (80, 81) operates said elevating device (80, 138, AF) (column 24, lines 32-53) based on detection results of said detector (AF), to move said substrate stage away from said projection optical system along said optical axis direction.

Regarding applicant's claim 3. The exposure apparatus according to claim 2, wherein said detector (AF, 46), is positioned in a plurality of positions, at greater distances from said projection optical system in directions substantially perpendicular to said optical axis direction than the stopping distance of said substrate stage (column 23, lines 15-41).

Regarding applicant's claim 4. The exposure apparatus according to claim 1, further comprising an vibration isolation device (column 6, lines 27-51) which supports said projection optical system while preventing vibrations, movably along said optical axis direction, wherein said control device (80, 81) operates said vibration isolation device (column 6, lines 27-51) to raise said projection optical system (column 51, lines 3-19) in said optical axis direction, based on detection results of said detector (AF).

Regarding applicant's claim 5. The exposure apparatus according to claim 1, further comprising a second vibration isolation device (column 6, lines 27-51) which supports said substrate stage while preventing vibrations, movably along said optical axis direction, wherein said control device (80, 81) operates said second vibration isolation device (column 6, lines 27-51) to lower said substrate stage in said optical axis direction, based on detection results of said detector (AF).

Regarding applicant's claim 6. An exposure apparatus, comprising:
a projection optical system which projects and transfers a pattern formed on a mask onto a substrate (abstract), and a substrate stage, positioned below said projection optical system, which while holding said substrate (column 4, lines 18-35) moves in directions substantially perpendicular to the direction of the optical axis of said projection optical system, comprising: a detector (AF, 46), , positioned on a periphery of said projection optical system, which detects the position of said substrate stage or of said substrate along said optical axis direction; an vibration isolation device (column 6, lines 27-51), which supports said projection optical system so as to prevent vibrations, movably along said optical axis direction; a second vibration isolation device (column 6,

lines 27-51),, which supports said substrate stage so as to prevent vibrations, movably along said optical axis direction; and a control device, which, based on detection results of said detector (AF), , controls at least one of said vibration isolation device (column 6, lines 27-51)and said second vibration isolation device (column 6, lines 27-51)to move said substrate stage and said projection optical system, or said substrate and said projection optical system, along said optical axis direction.

Regarding applicant's claim 16. A device manufacturing method, comprising a lithography process, wherein in said lithography process, an exposure apparatus according to Claims 1 is used (title).

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent prior art is closely related art that individually or in combination could be considered grounds for rejection. See references cited for a listing of the pertinent prior art found and the prior art found.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Smyth whose telephone number is 571-270-1746. The examiner can normally be reached on 7:30AM - 5:00PM; Monday thru Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jack I. Berman/

Primary Examiner, Art Unit 2881

/A. S./

Examiner, Art Unit 2881